

Application No. 10/722,814
Amendment dated February 17, 2006
After Final Office Action of December 21, 2005

Docket No.: 29936/39765

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of forming a gate electrode in a semiconductor, comprising:

sequentially forming a polysilicon film and a tungsten silicide film [sequentially] on a semiconductor substrate overlapping the polysilicon film, forming the tungsten silicide film by reacting SiH_4 or SiH_2Cl_2 with WF_6 at a stoichiometric ratio of (SiH_4 or SiH_2Cl_2): WF_6 of 2.0 - 2.8;

performing an annealing process to crystallize the tungsten silicide film; and

~~forming a gate electrode by performing a single etching process on the tungsten silicide film and the polysilicon film~~ performing an etching process to etch the tungsten silicide film and the polysilicon film under the tungsten silicide film using the same etching gas, thereby forming a gate electrode comprising the tungsten silicide film and the polysilicon film.

2. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 1, wherein the annealing process is one of an rapid thermal process (RTP) annealing process and a furnace annealing process for crystallizing an amorphous tungsten silicide film to form a crystalline metal silicide film.

3. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 2, comprising performing the RTP annealing process at a temperature ranging from about 900°C to about 1000°C for a time period ranging from about 10 seconds to about 30 seconds in an ambient atmosphere of N_2 or NH_3 gas, and performing the furnace annealing process at a temperature ranging from about 850°C to about 1000°C for a time period ranging from about 5 minutes to about 30 minutes in an ambient of N_2 or NH_3 gas.

4. (Canceled)

5. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 1, comprising performing the etching process under a process condition for etching the polysilicon film.

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6. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 5, wherein the etching process is a dry etching process, and comprising performing the etching process in an inductively coupled plasma chamber into which a mixture gas of Cl_2 gas and O_2 gas is introduced.

7. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 1, wherein the etching process is a dry etching process, and comprising performing the etching process in an inductively coupled plasma chamber into which a mixture gas of Cl_2 gas and O_2 gas is introduced.

8. (Original) The method of forming a gate electrode in a semiconductor according to claim 1, where in the annealing process results in the etch rate of the crystallized metal silicide film being similar to that of the polysilicon film.